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AUTHOR Kerka, Sandra
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ABSTRACT

The rapidly developing communications technologies (CT) have the potential to deliver education to more learners in more satisfactory ways. CT may overcome barriers to student participation in adult education, enable career educators to provide a higher level of career guidance to greater numbers, and facilitate currency in vocational preparation. Delivery modes include video, audio and audiographic, and computer. Examples of CT uses in adult, career, and vocational education are the AgriData Network, Instructional Television Fixed Service, Ohio State University's Cooperative Extension Service's microwave transmission to operate a television classroom, and several electronic networks. Various studies have researched the instructional effectiveness of CT. Findings indicate that instruction involving CT is most effective when the instruction is "high touch" and interactive, students are prepared in advance, students understand supplemental materials, and the instruction does not imitate face-to-face teaching. CT can increase access to learning opportunities and more and better information sources, be individualized to meet student needs, and enhance immediacy while saving time and money. However, concerns about the effects of CT include equity of access, ethics, quality of instruction, effect on learning, and accommodation of different learning styles. (13 references) (YLB)

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ERIC DIGEST No. 81

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Clearinghouse on Adult, Career, and Vocational Education

COMMUNICATIONS TECHNOLOGIES IN ADULT, CAREER, AND VOCATIONAL EDUCATION

Communications technologies (CT) are developing at a rapid pace, carrying the potential to deliver education to more learners in more satisfactory ways. For adult educators, CT might overcome some of the barriers to student participation. Career educators and counselors could provide a higher level of career guidance to greater numbers. The need for currency in vocational preparation can be facilitated by CT. An earlier ERIC Digest (Miller [1983]) described some of these technologies and how they will influence education and the role of the educator. To update that information, this Digest looks at some uses and their effectiveness; it also reviews some of the issues their use poses for adult, career, and vocational educators.

Types and Uses

CT delivery modes include video (low-power, closed-circuit, and cable television; videotapes; interactive videodisks), audio and audiographic (audiocassettes; radio; electronic blackboards; telefacsimile; freeze-frame, slow-scan, or compressed video), and computer (electronic mail networks, bulletin boards, teletext, videotex). Integrated systems can link videodisks, compact disks (CD-ROM), and microcomputers with telecommunications devices such as satellites to allow the exchange of large amounts of information and interactive communication (Schamber 1988).

Examples of CT uses in adult, career, and vocational education include the following:

- The AgriData Network provides reports of news, markets, trends; collections of agriculture teaching plans; daily condensed listing of current agriculture news; and an electronic mail system. Developers plan to expand its use to adult evening classes (Reynolds 1986).
- Instructional Television Fixed Service is used in the Silicon Valley to offer training to employees of computer companies. In the pilot project, stress management and chemical safety training were broadcast by Mission College in cooperation with the local Industry-Education Council. Off-campus sites committed $800 to the installation of receiving equipment (Rose and Capell 1986).
- Ohio State University's Cooperative Extension Service uses microwave transmission to operate a TV classroom 15 hours per week. Average hourly cost for uplinking and satellite time is $846. Expenses are contained by sharing costs of equipment, facilities, and personnel with research and instructional programs (Whiting 1988).
- Electronic networks include AEDNET for adult educators, CAPS:HITECH for career counselors, and ADVOCNET for adult and vocational educators.

Instructional Effectiveness

The variety of media and wide range of potential students prompt the questions: What is the best way to use a medium for a learning task? Is the way a medium is used more important than which medium is used? (Seaborne 1987). As with other forms of instructional technology, more research is needed about the effectiveness of CT.

Norenberg and Lundblad (1987) offer matrices to aid in choosing technologies. One matrix examines learner, teacher, and instructional considerations for print, audio, audiographic, video, and computer technologies; the other compares costs. They suggest that the choice of medium be based on such factors as objectives, cost, personnel, users, anticipated use, level of interactivity, legal barriers, compatibility, and jurisdiction.

Some findings are summarized as follows:

- At the University of Victoria (British Columbia), evaluation of continuing education telelectures found that instructors covered too much material, students were inhibited from interacting because of the broadcast format, and despite the potential of the medium, the presentation remained more verbal than visual (Collins and Murphy 1987).
- The teleconferencing experience at the University of Georgia's (1987) Division of Vocational Education prompted the following recommendations: (1) make instruction "high touch" and interactive, for example, demonstrations replicable by students at remote sites; (2) prepare students in advance with materials and agenda; and (3) remember that teleconferencing is different from face-to-face instruction and need not imitate it.
- The Ontario Institute for Studies in Education's computer conferencing system enables students to access adult education courses through their personal computers at any time of the day. Assignments, discussion comments, and requests for library materials can be sent online. Problems were encountered in accessing the system, understanding the instruction sheets, and uploading or downloading materials. Participants expressed satisfaction with the convenience, the relationship of the course to the required readings, the quality of interaction

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CENTER ON EDUCATION AND TRAINING FOR EMPLOYMENT
THE OHIO STATE UNIVERSITY
1900 KENNY ROAD • COLUMBUS, OHIO 43210
Telephone: (614) 292-4353 or (800) 848-4815

with the instructor, and the sense of community among the students (Seaborne 1987).

Issues in the Use of Communications Technologies

The examples given here illustrate some of the advantages and disadvantages of using CT. On the positive side, CT can increase access to learning opportunities, especially for learners in distant, isolated areas possibly lacking subject experts or for learners with limited physical mobility. It can increase access to more and better information resources, be individualized to meet student needs, and enhance the immediacy of inservice training while saving time and money.

On the other hand, Zucker (1986) argues that CT can isolate students, undercut local autonomy and instructor control, reduce diversity and pluralism, and make students passive recipients of overstructured packets of knowledge. The capacity for greater interactivity in today's technology may have the potential to overcome some of these problems (Niemi and Gooler 1987).

Other concerns about the effects of CT include the following:

- **Equity of Access**--Are there "information haves and have-nots"? Are there gender differences in technology use? Who controls access and decides what types of instruction will be made available (Gooler 1987)?
- **Ethics**--How will competition and duplication of course offerings across geographical boundaries be resolved (Dean 1986)?
- **Quality of Instruction**--Do all subjects work well in these formats? Will traditional instructional design methods remain effective? Does the design allow students to take responsibility for learning? How does the functioning of hardware and software affect the choice of instructional technique (Niemi and Gooler 1987)?
- **Effect on Learning**--How does technology alter the speed at which learning takes place? Does it affect the age targeting of educational institutions and the sequential organization of curriculum? How does it alter the context of learning? What effect does it have on the topical organization of instruction? What new skills or cognitive abilities are needed to use it (Fasano 1986)?
- **Learning Styles**--How can differences in learning styles and strategies be accommodated in a manageable instructional delivery system (Niemi and Gooler 1987)? Can cognitive styles be matched to appropriate methods of presentation (Collins and Murphy 1987)?

The changing technological workplace, telecommuting, global competition, lifelong cycles of education, training, and work--these are some of the challenges facing adult, career, and vocational educators. Because today's youth tend to take technology for granted, living in ever-more high-tech electronic households, an enormous potential market exists for education delivered by means of communications technologies. Educators can take advantage of this opportunity by letting the machines do what machines do best and continuing to do what they do best: design instruction, manage learning, and motivate human beings to learn.

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